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Installation of Spectrally Selective Imaging System in RF Negative Ion Source

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Understanding of negative hydrogen ion behavior near the production surface is an important issue to maintain high negative beam current in a hydrogen negative ion source for NBI. We install a spectrally selective imaging system based on a GigE vision camera with Gigabit Ethernet connection, in the RF negative ion source in ELISE. A distribution of H_α emission near the plasma grid has been clearly observed, and the time trace of its intensity is consistent with the signal intensity of H_α emission observed by optical emission spectroscopy located at the opposite side viewing port. Signal reductions of H_α emission during beam extraction are the same characteristics in both. Reduction area is widely distributed in the extraction region in the long discharge operation, which behavior is similar to the reduction distribution measured in arc discharge source.